Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-28. (Cancelled)

29. (Previously presented) A method for manufacturing a porous semiconductor device having a light emitting function and comprising a porous substrate having through-holes, and a porous semiconductor layer formed on a surface of this substrate, the method comprising at least steps of:

(a) preparing a porous substrate and at least one of semiconductor particles having a light emitting function that works by electroluminescence, cathode luminescence, or photoluminescence;

(b) producing a suspension of the semiconductor particles; and

(c) filtering the suspension through the porous substrate, thereby forming a deposited layer comprising semiconductor particles on the surface of the porous substrate.

30. (Previously presented) A method for manufacturing a porous semiconductor device according to Claim 29, further comprising a step of forming an electrode for injecting current into the deposited layer.

31. (Previously presented) A method for manufacturing a porous semiconductor device according to Claim 29, further comprising a step of performing a treatment for bonding together the individual semiconductor particles that form the deposited layer, after the step (c) .

32. (Previously presented) A method for manufacturing a porous semiconductor device according to Claim 31, wherein the treatment is a heat treatment.

33. (Previously presented) A method for manufacturing a porous semiconductor device according to Claim 31, wherein the treatment is a treatment in which a semiconductor material is deposited in the vapor phase at the contact portions between the semiconductor particles.

34. (Previously presented) A method for manufacturing a porous semiconductor device according to Claim 29, comprising a step of coating a surface of the semiconductor particles with an insulating layer or a material having a photocatalytic function, between the steps (a) and (b).

35. (Previously presented) A method for manufacturing a porous semiconductor device according to Claim 29, wherein a step of coating a porous substrate surface with an insulating layer is added before the step (c), and a step of coating the surface of the deposited layer with an insulating layer is added after the step (c).

36. (Previously presented) A method for manufacturing a porous semiconductor device according to Claim 29, wherein in the step (b), at least one of suspension of p-type semiconductor particles and at least one of suspension of n-type semiconductor particles are prepared, and in the step (c), these suspensions are alternately filtered through the porous substrate to form a deposited layer with a pn junction structure.

37. (Previously presented) A method for manufacturing a porous semiconductor device according to Claim 29, wherein an average size of the semiconductor particles is from 0.01 to 5 μm.

38. (Cancelled)

39. (Previously Presented) A porous semiconductor device for filtering, sterilizing and decomposing organic matter, the porous semiconductor device comprising:

a porous substrate having continuous pores; and

a porous semiconductor layer having a light emitting property by electroluminescence, cathode luminescence, or photoluminescence, and having continuous pores,

wherein an electrode is formed on a top or bottom surface of the porous substrate, a porous insulating layer, a porous semiconductor layer, another porous insulating layer, and another electrode are formed sequentially on the porous substrate, the porous semiconductor layer emits ultraviolet light by electroluminescence when AC voltage is applied between the electrodes, and the porous semiconductor layer has a bandgap of at least 3.2 eV and is doped with gadolinium, which is the light emitting center, and

the porous semiconductor layer comprises a material selected from a group consisting of GaN, AlN, ZnO, ZnF_2, and diamond.

40. (Previously presented) A porous semiconductor device for filtering, sterilizing and decomposing organic matter, the porous semiconductor device comprising:

a porous substrate having continuous pores; and

a porous semiconductor layer having a light emitting function that works by electroluminescence, cathode luminescence, or photoluminescence, and having continuous pores;

wherein an electrode is formed on a top or bottom surface of the porous substrate, the porous semiconductor layer is formed by dispersing semiconductor particles in an insulating layer, an electrode is formed on the porous semiconductor layer, the porous semiconductor layer emits ultraviolet light by electroluminescence when AC voltage is applied between the electrodes, and the semiconductor particles have a bandgap of at least 3.2 eV and are doped with gadolinium, which is the light emitting center.

41. (Previously presented) A porous semiconductor device according to Claim 39 or 40, wherein a surface of the porous insulating layer or of the porous semiconductor layer formed by dispersing semiconductor particles in the insulating layer is covered by a porous layer having a photocatalytic function, or pore walls of the porous substrate are covered by a material having a photocatalytic function.

42. (Previously presented) A porous semiconductor device according to Claim 39 or 40, wherein the porous insulating layer or the insulating layer in which the semiconductor particles are dispersed is formed from a material having a photocatalytic function.

43. (Previously presented) A porous semiconductor device according to Claim 39 or 40, wherein the bandgap of the porous semiconductor layer or the semiconductor particles is at least 4.0 eV.

44. (Previously presented) A porous semiconductor device according to Claim 39 or 40, wherein either the electrodes are porous or the structure of the electrodes has a porous structure.

45. (Previously presented) A porous semiconductor device according to Claim 44, wherein the electrodes comprises a porous transparent electroconductive film.

46. (Previously presented) A method for manufacturing a porous semiconductor device in which a porous insulating layer, a porous semiconductor layer, and a porous insulating layer are laminated on a porous substrate having continuous pores and having an electrode formed on its top or bottom surface, and another electrode is formed on the top surface, the porous semiconductor device emitting ultraviolet light by electroluminescence when AC voltage is applied between the electrodes, the method comprising at least steps of:

(a) preparing a suspension of gadolinium-doped semiconductor powder and a suspension of a insulator powder;

(b) filtering the suspension of a insulator powder through the porous substrate to deposit a porous insulating layer on the porous substrate surface;

(c) filtering the suspension of the semiconductor powder through the porous substrate to deposit a porous semiconductor layer on the insulating layer; and

(d) further filtering the suspension of the insulator powder through the porous substrate to deposit a porous insulating layer on the semiconductor layer.

47. (Previously presented) A method for manufacturing a porous semiconductor device in which a porous semiconductor layer comprising semiconductor particles dispersed in an insulating layer is formed on a porous substrate having continuous pores and having an electrode formed on its top or bottom surface, and another electrode is formed on the top surface, the porous semiconductor device emitting ultraviolet light by electroluminescence when AC voltage is applied between the electrodes, the method comprising at least steps of:

(a) preparing a gadolinium-doped semiconductor powder;

(b) covering the semiconductor powder with an insulating layer and preparing another suspension thereof; and

(c) filtering the suspension through the porous substrate to deposit a porous semiconductor layer on the porous substrate.

48. (Previously presented) A filter composed of the porous semiconductor device according to Claim 39 or 40.

49. (Previously presented) A bioreactor composed of the porous semiconductor device according to Claim 39 or 40.

50. (Previously presented) An ultraviolet light source that makes use of the porous semiconductor device according to Claim 39 or 40.

51. (Previously presented) A porous semiconductor device for filtering, sterilizing and decomposing organic matter, the porous semiconductor device comprising:

a porous substrate having continuous pores; and

a porous semiconductor layer having a light emitting function that works by electroluminescence, cathode luminescence, or photoluminescence, and having continuous pores,

wherein the porous semiconductor layer is made of porous silicon nitride comprising columnar Si_3N_4 particles with an average aspect ratio of at least 3 and an oxide-based binder phase containing at least one of rare earth element, and emits visible light or ultraviolet light.

52. (Previously presented) A porous semiconductor device according to Claim 51, wherein a surface of the columnar Si_3N_4 particles is covered with a film or particles having a photocatalytic function.

53. (Previously presented) A porous semiconductor device according to Claim 51, wherein a film or deposited layer of particles having a photocatalytic function is formed on a surface of the porous semiconductor layer.

54. (Previously presented) A porous semiconductor device according to Claim 51, which emits ultraviolet light having its peak wavelength in a range of at 300 to 320 nm.

55. (Previously presented) A porous semiconductor device according to Claim 51, containing at least gadolinium as the rare earth element.

56. (Previously presented) A porous semiconductor device according to Claim 55, further containing yttrium as the rare earth element.

57. (Previously presented) A porous semiconductor device according to Claim 51, wherein an average pore size of the porous semiconductor layer is from 0.1 to 5 μm.

58. (Previously presented) A porous semiconductor device according to Claim 51, wherein a three-point bending strength is at least 100 MPa.

59. (Previously presented) A light emitting device having the porous semiconductor device according to Claim 51.

60. (Previously presented) A filter that makes use of the porous semiconductor device according to Claim 51.

61. (Previously presented) A porous semiconductor device for filtering, sterilizing and decomposing organic matter, the porous semiconductor device comprising:

a porous substrate having continuous pores; and

a porous semiconductor layer having a light emitting function that works by electroluminescence, cathode luminescence, or photoluminescence, and having continuous pores,

wherein the porous substrate is columnar in shape and has formed therein in an axial direction a plurality of holes serving as passages for a fluid to be treated, the continuous pores lead from an inner wall of the holes to a side of the column, and the porous semiconductor layer is formed on the inner wall.

Claim 62. (Cancelled)